Status and problems on the B lifetime analysis

Mar-4 lepton+SVT meeting
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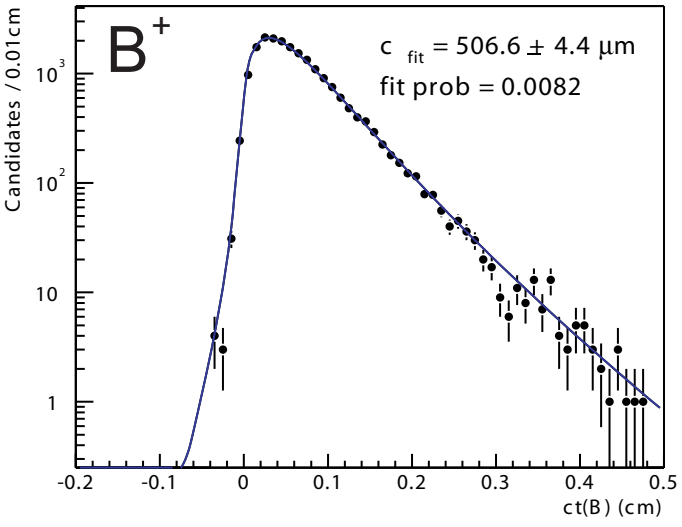
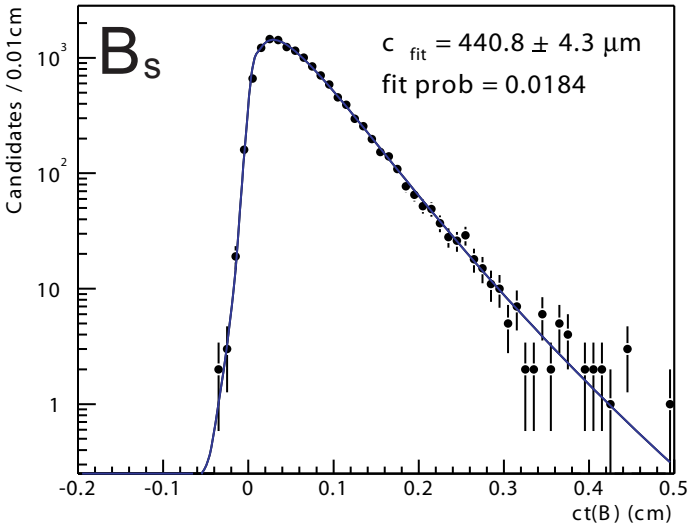
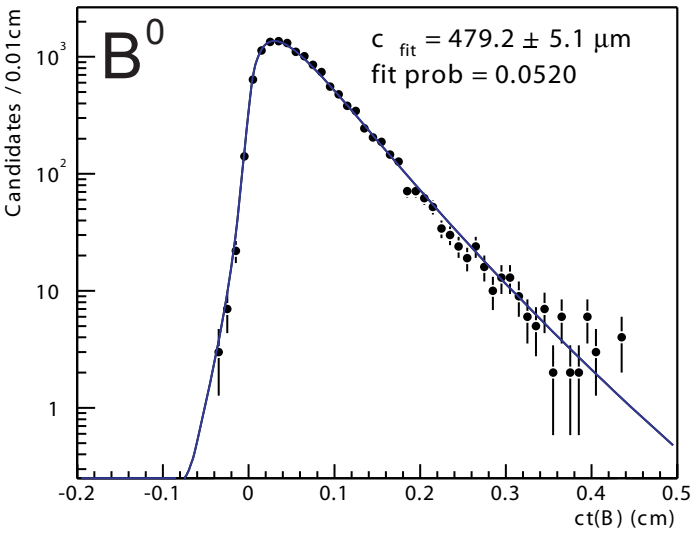
There are still 2 problems unsolved.

1. B^0 realistic-MC fitting
2. disagreement of decay length between realistic-MC and data

As described in CDF 6321, we try to fit the realistic MC using ct efficiency and Kfactor from the parametric MC.



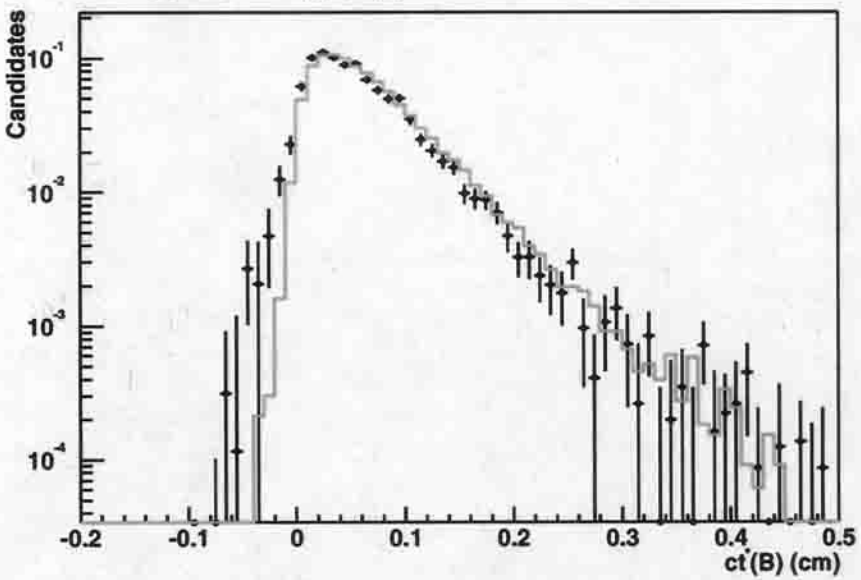




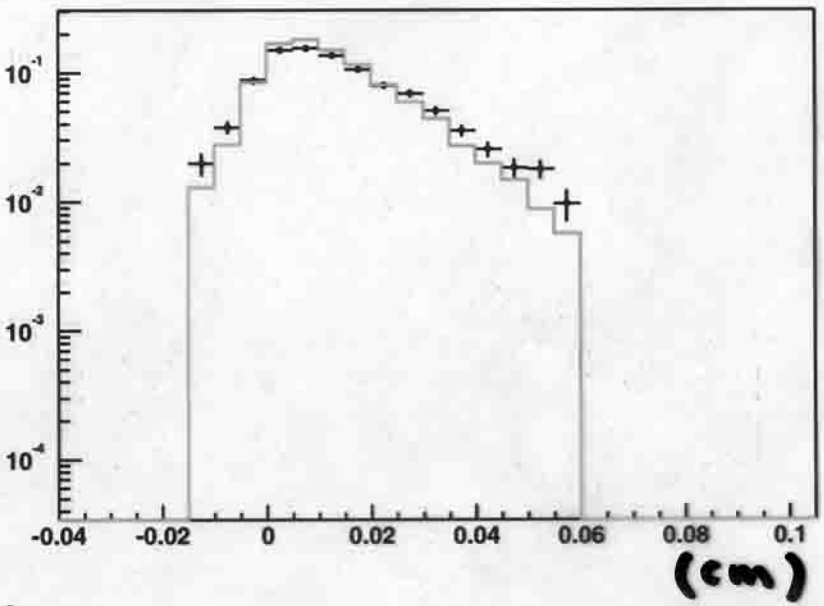
Only the B^0 shows 3σ different fitted lifetime from the true one.
Something unknown effects?
- kinematics are softer for the B^0 than other two.

Disagreement between data and real-MC

$ct^*(B)$



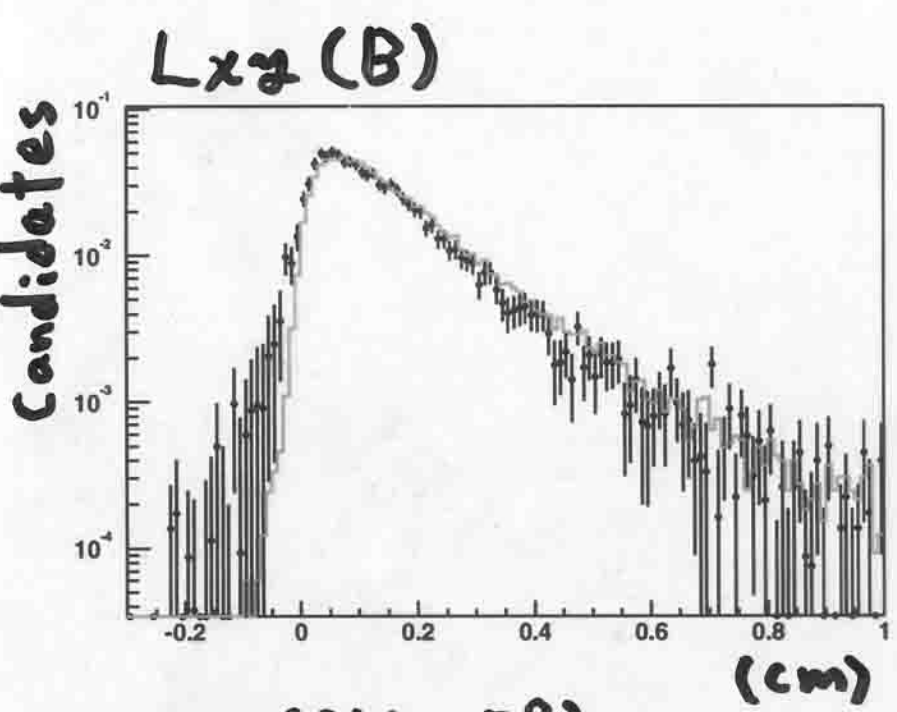
$ct(D^0)$

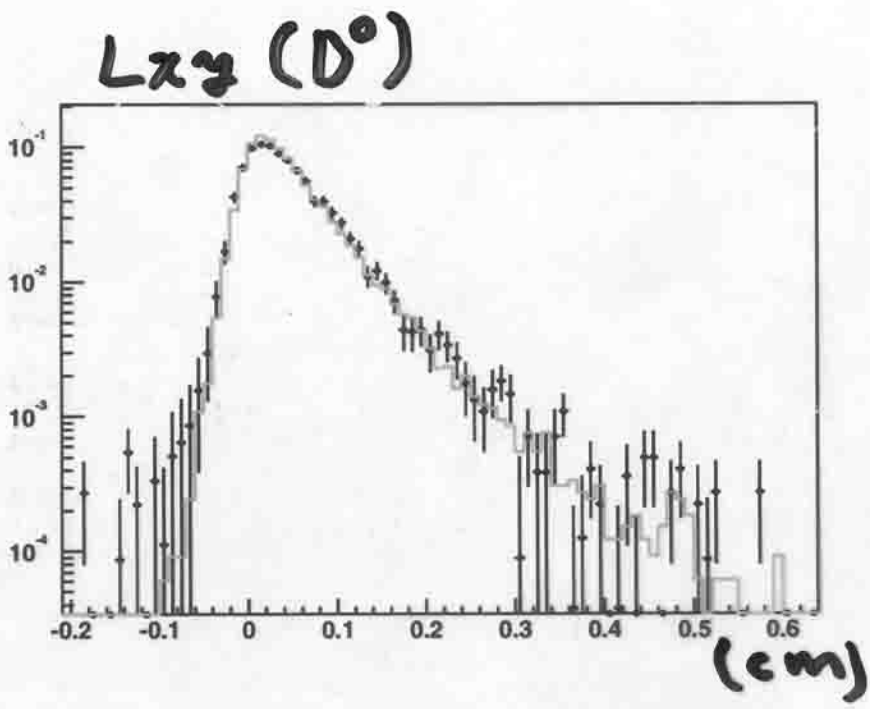


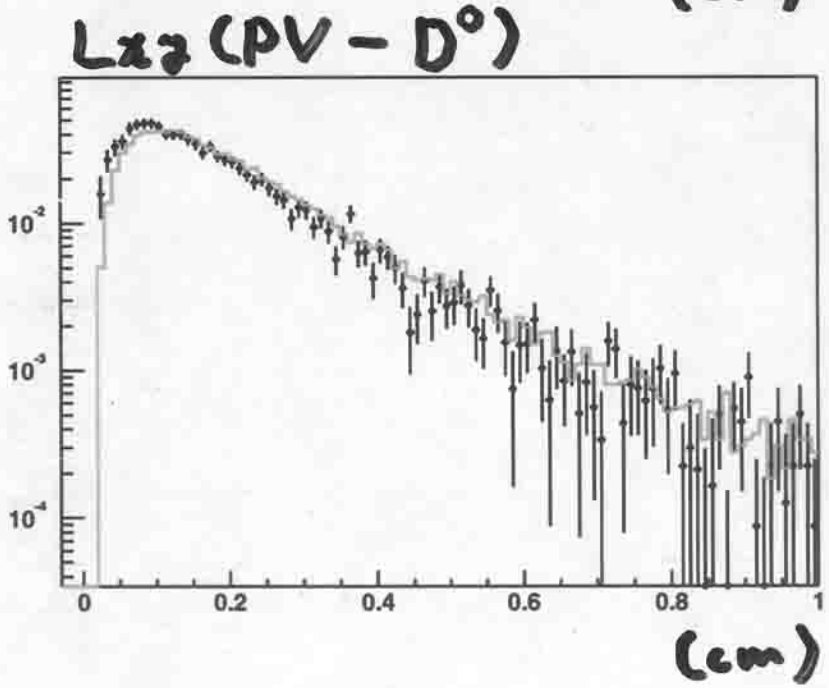
points ... data ($\mu + D^0$)

red line ... realistic-MC ($\mu + D^0$)

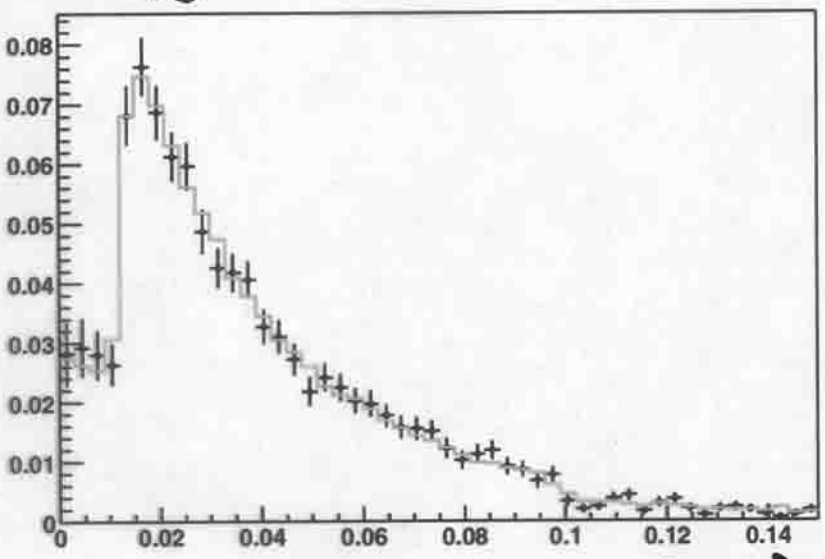
Looks like a systematic shift about 50 μm ...


Lxz (B)
Candidates
(cm)

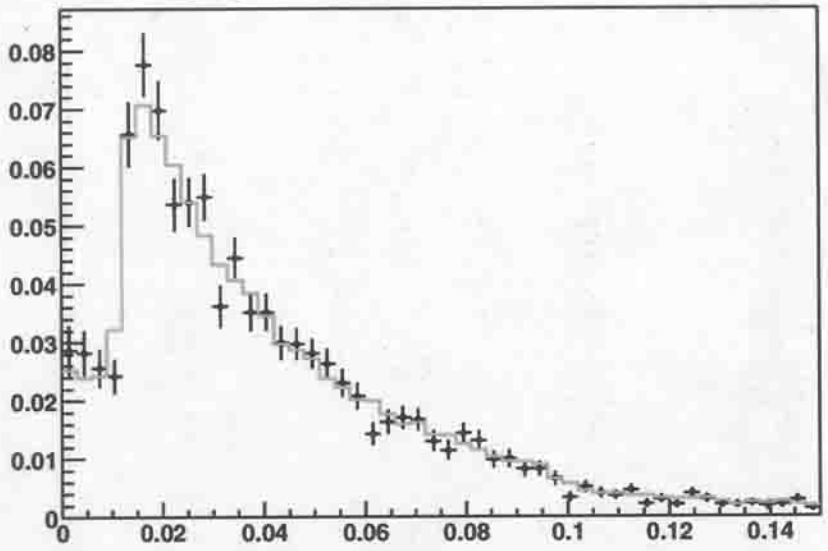

Lxz (D°)
(cm)


Lxz (PV - D°)
(cm)

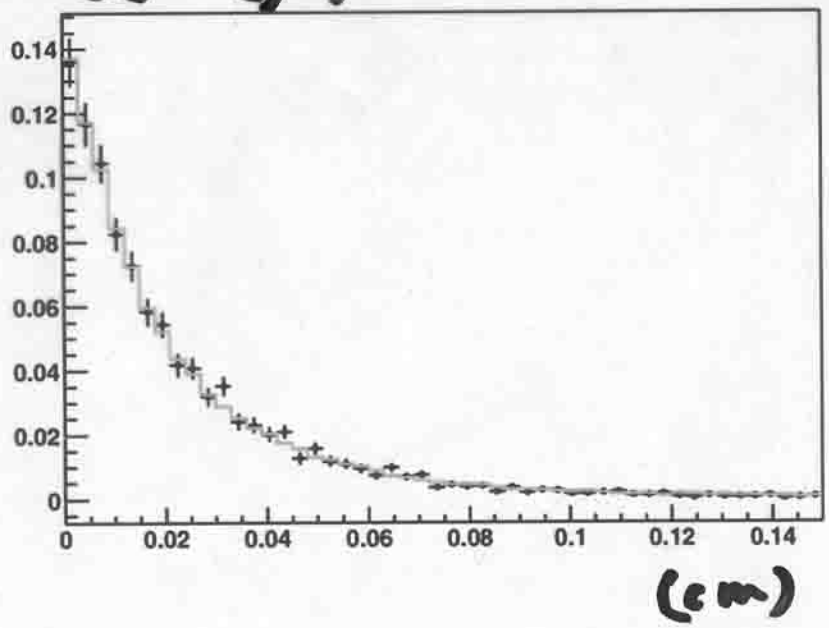
$d_0^{svx}(K)$



$d_0^{svx}(\pi)$



$d_0^{svx}(\mu)$



- data ... 2D refitted
- real MC ... def Track
- Problem of the 2D-refit and vertex fitting ?

Summary

2 problems are still preventing us to finish up the fit.

1. B^0 realistic-MC fitting
2. disagreement of decay lengths between data and real-MC

problem 1 affects to B+/B0 lifetime ratio about 5 per cent.

problem 2 also gives about 2% effect to the ratio, and may also affect to the Bs lifetime.